

Appendix

In this part of the text, you can find some details of the topics treated in this book.

Appendix A: Code for the link between Aspen Plus and MS Excel®

```
Public Sub REGENERATIVE_RANKINE_CYCLE()  
  
Dim Power_Plant As IHapp  
Set Power_Plant = GetObject("SIMULATOR FILE ROUTE\FILE NAME.bkp")  
Power_Plant.Visible = True  
Power_Plant.SuppressDialogs = True  
  
'DECISION VARIABLES TRANSFER FROM EXCEL TO ASPEN PLUS  
  
Dim Boiler_Temp As IHNode, Boiler_Pres As IHNode, TurbHP_Pres As  
IHNode, TurbIP_Pres As IHNode, TurbLP_Pres As IHNode, Pump_Pres As  
IHNode, Div1_Frac As IHNode, Div2_Frac As IHNode  
  
Set Boiler_Temp = Power_Plant.Tree.FindNode("\Data\Blocks\  
BOILER\Input\TEMP")  
Set Boiler_Pres = Power_Plant.Tree.FindNode("\Data\Blocks\  
BOILER\Input\PRES")  
Set TurbHP_Pres = Power_Plant.Tree.FindNode("\Data\Blocks\  
TURB-HP\Input\DELP")
```

```

Set TurbIP_Pres = Power_Plant.Tree.FindNode("\Data\Blocks\
TURB-IP\Input\DELP")
Set TurbLP_Pres = Power_Plant.Tree.FindNode("\Data\Blocks\
TURB-LP\Input\DELP")
Set Pump_Pres = Power_Plant.Tree.FindNode("\Data\Blocks\PUMP\
Input\PRES")
Set Div1_Frac = Power_Plant.Tree.FindNode("\Data\Blocks\SPLIT1\
Input\FRAC\3")
Set Div2_Frac = Power_Plant.Tree.FindNode("\Data\Blocks\SPLIT2\
Input\FRAC\6")

Boiler_Temp.Value = Sheets("DV to Aspen Plus").Range("C3")
Boiler_Pres.Value = Sheets("DV to Aspen Plus").Range("C4")
TurbHP_Pres.Value = Sheets("DV to Aspen Plus").Range("C5")
TurbIP_Pres.Value = Sheets("DV to Aspen Plus").Range("C6")
TurbLP_Pres.Value = Sheets("DV to Aspen Plus").Range("C7")
Pump_Pres.Value = Sheets("DV to Aspen Plus").Range("C8")
Div1_Frac.Value = Sheets("DV to Aspen Plus").Range("C9")
Div2_Frac.Value = Sheets("DV to Aspen Plus").Range("C10")

Power_Plant.Reinit      'REINITIALIZE ASPEN PLUS
Power_Plant.Run         'ACTIVATE ASPEN PLUS

'DATA TRANSFER FROM ASPEN HYSYS TO EXCEL

Dim Boiler_Q As INode, TurbHP_W As INode, TurbIP_W As INode,
TurbLP_W As INode, Tower_Q As INode, Pump_W As INode, Boiler_
Cost As INode, Tower_Cost As INode, Boiler_Op_Cost As INode

Set Boiler_Q = Power_Plant.Tree.FindNode("\Data\Blocks\BOILER\
Output\QNET")
Set TurbHP_W = Power_Plant.Tree.FindNode("\Data\Blocks\TURB-HP\
Output\WNET")
Set TurbIP_W = Power_Plant.Tree.FindNode("\Data\Blocks\TURB-IP\
Output\WNET")
Set TurbLP_W = Power_Plant.Tree.FindNode("\Data\Blocks\TURB-LP\
Output\WNET")
Set Tower_Q = Power_Plant.Tree.FindNode("\Data\Blocks\TOWER\
Output\HX_DUTY")
Set Pump_W = Power_Plant.Tree.FindNode("\Data\Blocks\PUMP\
Output\WNET")
Set Boiler_Cost = Power_Plant.Tree.FindNode("\Data\Blocks\
BOILER\Output\UTIL_COST")

```

```
Set Tower_Cost = Power_Plant.Tree.FindNode("\Data\Blocks\TOWER\
Output\UTL_COST")
```

```
Sheets("Data from Aspen Plus").Range("C3") = Boiler_Q.Value
Sheets("Data from Aspen Plus").Range("C4") = TurbHP_W.Value
Sheets("Data from Aspen Plus").Range("C5") = TurbIP_W.Value
Sheets("Data from Aspen Plus").Range("C6") = TurbLP_W.Value
Sheets("Data from Aspen Plus").Range("C7") = Tower_Q.Value
Sheets("Data from Aspen Plus").Range("C8") = Pump_W.Value
Sheets("Data from Aspen Plus").Range("C9") = Boiler_Cost.Value
Sheets("Data from Aspen Plus").Range("C10") = Tower_Cost.Value
```

```
End Sub
```

Appendix B: Code for the link between SuperPro Designer® and MS Excel®

```
Public Sub SetAdReadStarchFlowrate()
Dim str1, str2, str3, str4 As String
Dim var1, var2, var3, var4, var5, var6 As Variant
Set DocObj1 = GetObject("SIMULATOR FILE ROUTE\FILE NAME.spf")
var1 = Worksheets("DV to Aspen Plus").Range("C3")
var2 = Worksheets("DV to Aspen Plus").Range("C4")
var3 = Worksheets("DV to Aspen Plus").Range("C5")
var4 = Worksheets("DV to Aspen Plus").Range("C6")
str1 = "S-101"
str2 = "S-102"
str3 = "S-110"
str4 = "S-115"
DocObj1.SetStreamVarVal str1, VarID.temperature_VID, var1, str1
DocObj1.SetStreamVarVal str1, VarID.pressure_VID, var2, str1
DocObj1.SetStreamVarVal str2, VarID.temperature_VID, var3, str2
DocObj1.SetStreamVarVal str2, VarID.pressure_VID, var4, str2
DocObj1.DoMEBalances var1, var2, var3, var4, var5, var6
DocObj1.DoEconomicCalculations
DocObj1.GetStreamVarVal str3, VarID.HeatRate_VID, var5, str3
DocObj1.GetStreamVarVal str4, VarID.massFlow_VID, var6, str4
Worksheets("Data from Aspen Plus").Range("C3") = var5
Worksheets("Data from Aspen Plus").Range("C4") = var6

End Sub
```

Appendix C: Code for the link between MS Excel® and MATLAB®

File 1: Function name and linker program file route

```
function F=g(pop)
pop

excelObject=actxserver('Excel.Application');
excelObject.Workbooks.Open ('LIKER FILE ROUTE\FILE NAME.xlsx')
hworkbook=excelObject.workbooks;
F=excelObject.Run ('Rankine',pop(1),pop(2))
hworkbook.Close;
F=-F
```

File 2: Optimization parameters and function call

```
clc;
clear;
lb=[100 5]';
ub=[500 100]';
opts = gaoptimset('Generations',10,'PopInitRange',[0 0;500
100],'PopulationSize',10,'EliteCount',2,'CrossoverFraction',0.8,'
TimeLimit',Inf,'StallGenLimit',Inf,'StallTimeLimit',inf,'Display'
,'iter','PlotFcns',@gplotbestf);
[x,fval,reason,output] = ga(@g,2,[],[],[],[],lb,ub,[],opts)
```

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